Spinning Head User Manual

Electric

1130 Blue Mound Road West, Ste 400. Haslet, TX 76052
Ph 817.439.1108 Fax 817.439.0633
www.machine-technologies.com
Rev3 – 10/11/07

Dear Customer,

Before starting this machine please complete the following;

Machine Date of purchase……..

Machine serial number……

Please read the following information contained within this manual and fully familiarize yourself with the equipment.

Contents **Page**

Section 1 - General Safety information **3**
Danger **3**
Section 2 - Machine Description **4**
Function **4**
Machine illustrations **5**
Basic Spinning head **5**
Exploded view of full machine **6**
Control box and mount **7**
Control box assembly to support **7**
Control box assembly to support **8**
Section 3 –Typical positioning **8**
Section 3 –Typical positioning **9**
Section 4 – Machine set up **10**
Unpacking **10**
Operational photo **10**
Machine adjustments **11**
Shim adjustment **11**
Blade replacement **12**
Section 5 – Machine operation / cleaning / maintenance **13**
Notes for operation **13**
Notes for cleaning **14**
Notes for maintenance **14**
LIMITED WARRANTY POLICY **17**

Section 1 - General Safety information

Danger

Follow these instructions very carefully, in order to avoid injury to yourself or others.

Electrically powered machine.
Always ensure that all power to the machine has been turned off and isolated before ANY maintenance / repair work is carried out on the machine.

Ensure that all guards are correctly fitted before starting or attempting to operate the machine.

Ensure that all fasteners are present and correctly fitted before attempting to start or operate the machine.

Ensure that the rotating head on the end of the unit is correctly fastened, and free of damage before attempting to start or operate the machine.

Ensure that the rotating head on the end of the unit rotates freely and true, if not then DO NOT operate the unit

The spinning head produces high RPM on a heavy spinning plate with diffuser blades, which can be dangerous. Care must be taken by authorized persons when using and working with this machine.

DO NOT turn the unit on without it being correctly fastened to the tripod and winch assembly, together with a hose attached to provide stability against the torque reaction during start up.

DO NOT start the machine at any speed setting other than LOW, or the unit will “twist” around causing damage to the unit, the mountings and possibly injury to the operator.

NEVER run material through the spinning head without the unit being within a collection devise, or injury can result from flying material.

ALWAYS run the mortar pump at the lowest possible speed to do the job, to avoid pressurization of the spinner and bearing damage.

ALWAYS grease the unit (see notes later in this document) prior to use.

Always perform a “clean up” between manholes. Ensure that ALL material is removed from within the Nylon housing and around the drive shaft.

Section 2 - Machine Description

Function

The Spinning head has a drive motor, that turns a drive shaft within a Nylon housing that in turn rotates the rotating head fitted with diffuser blades. The drive motor is a 90V DC unit rated at 1HP @ 2500 RPM.

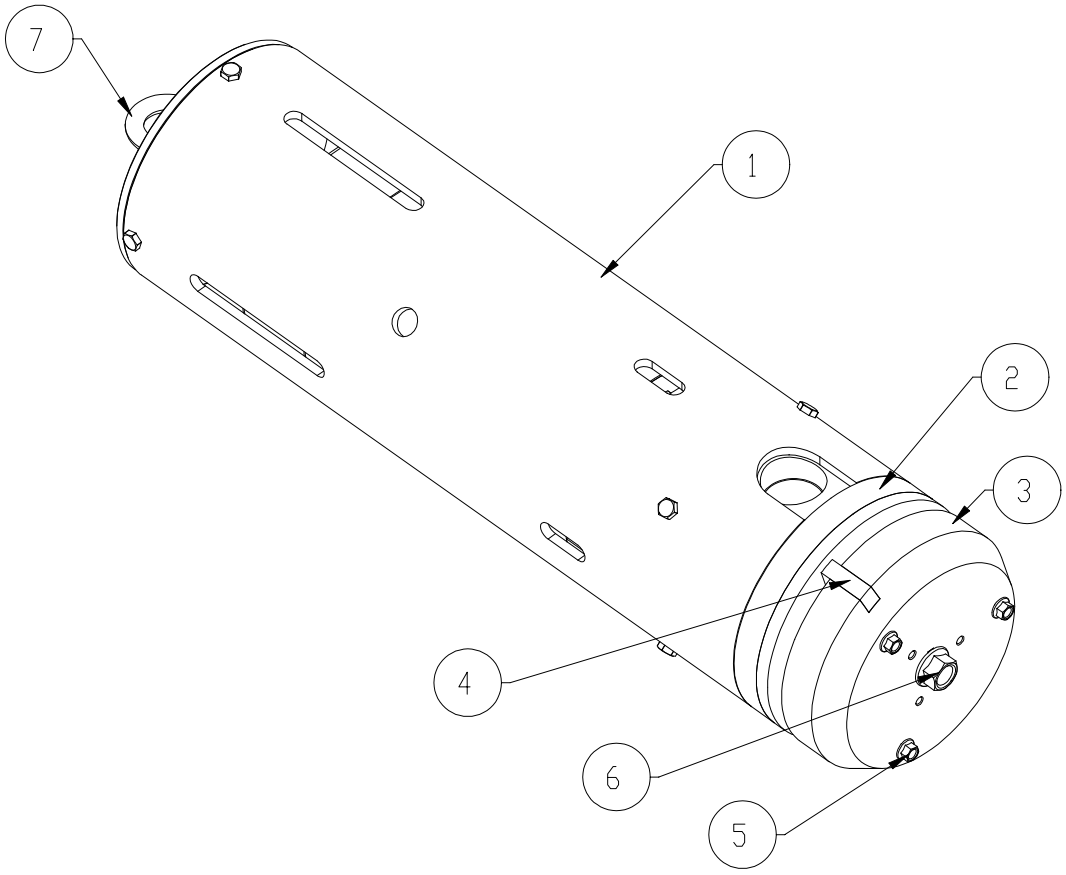
Material is fed into the spinning head from a pressurized line into the side of the Nylon housing, which then is redirected, axially, through the front of the unit out towards the spinning end plate. Centrifugal force from the rotation then causes the material to be thrown out and up away from the machine, allowing the coating of the surfaces to repaired.

The motor is powered by a variable speed DC motor controller, which is equipped with a number of trim pots allowing the setting of;
Maximum motor speed.
Minimum motor speed.
IR Compensation, to minimize load speed changes.
Current limit, limiting the max armature current.
Acceleration, controlling the rate of speed increase.

The rotating head is equipped with replaceable blades and removable shims, allowing for adjustment due to wear caused by material

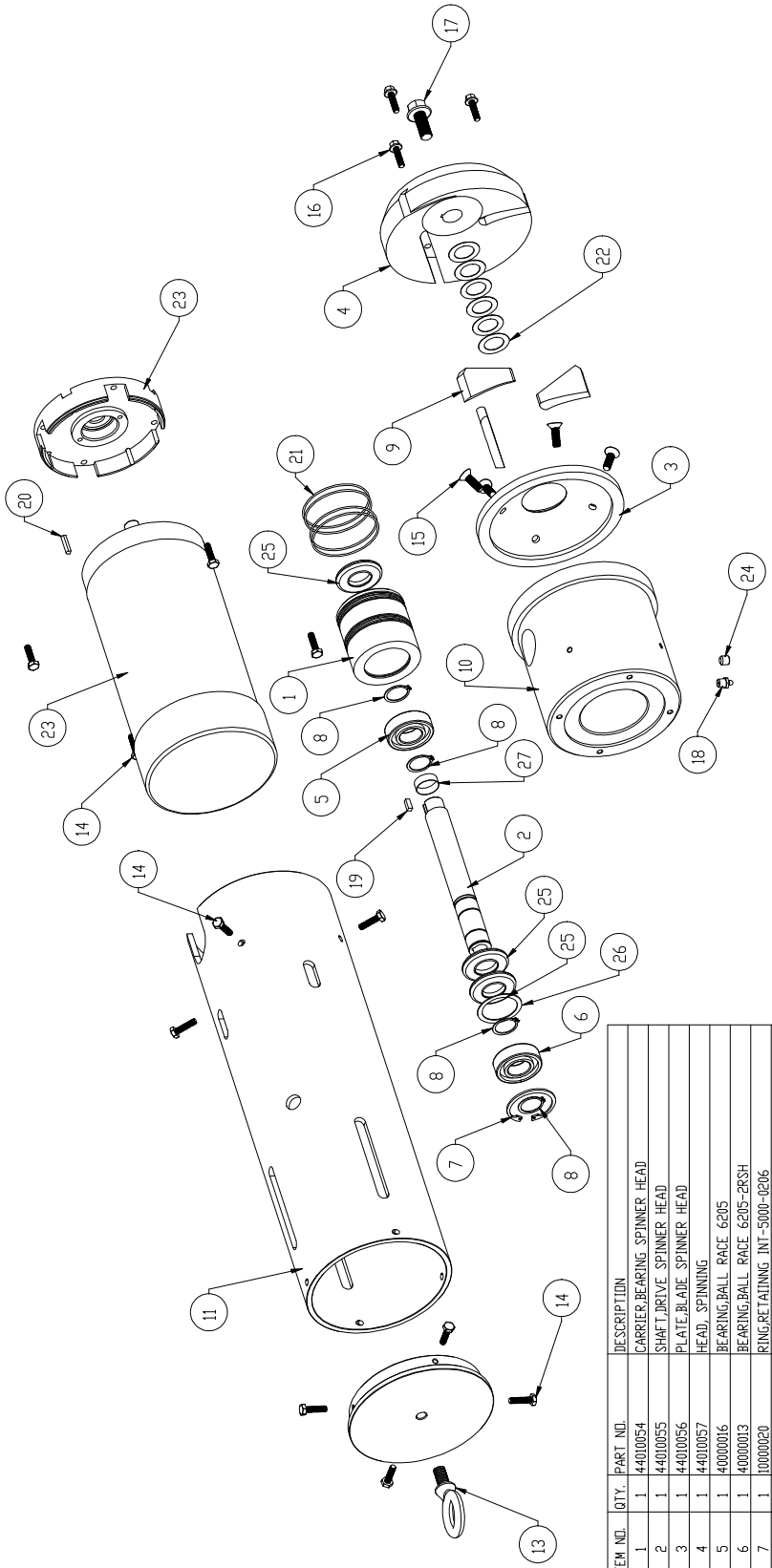
Machine illustrations

Basic Spinning head



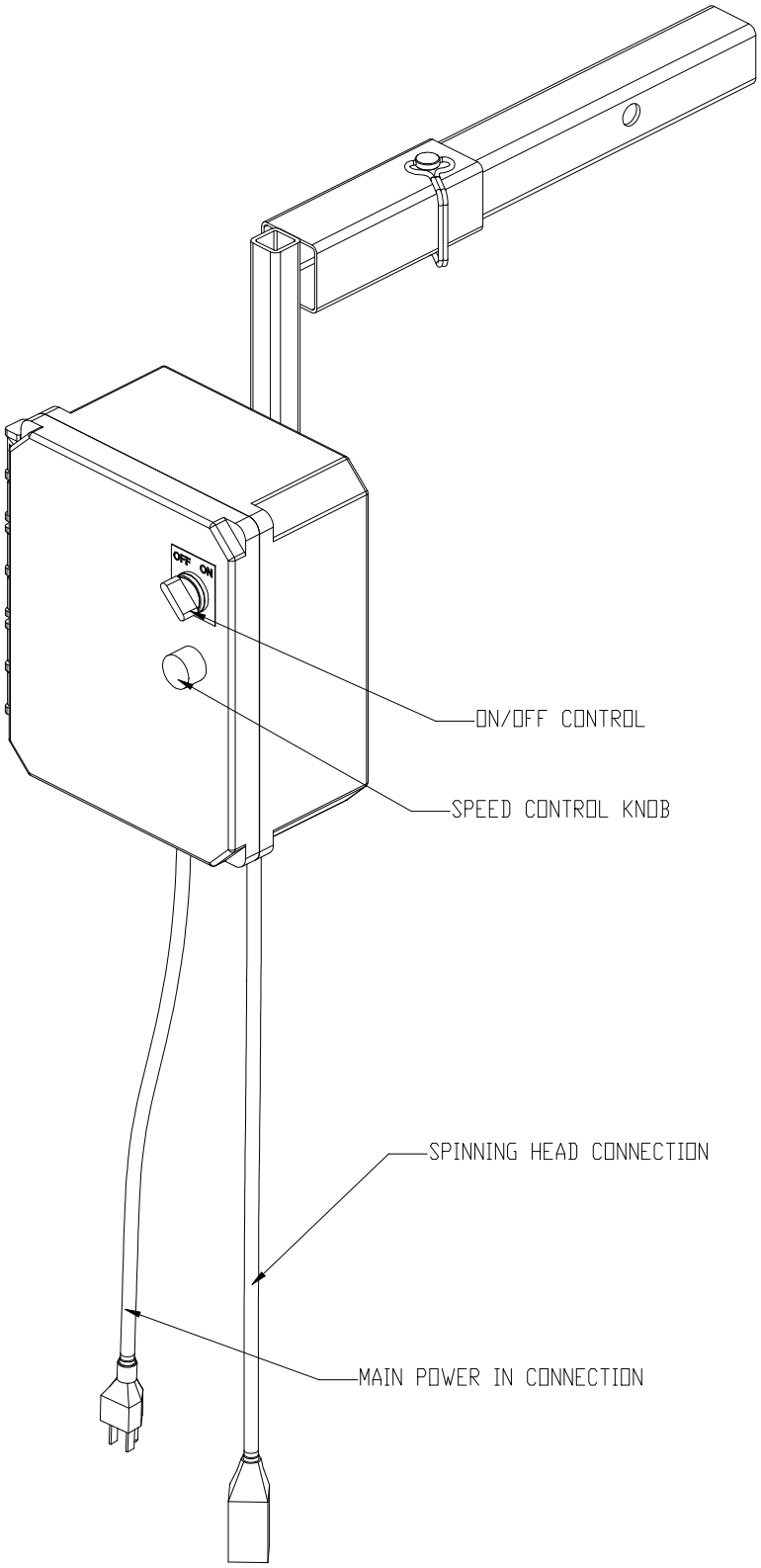
1 – Main body 2 – Nylon housing 3 – Rotating head 4 – replaceable blade
5 – Blade fixing bolt 6 – rotating head fixing bolt 7- lifting eye

Exploded view of full machine

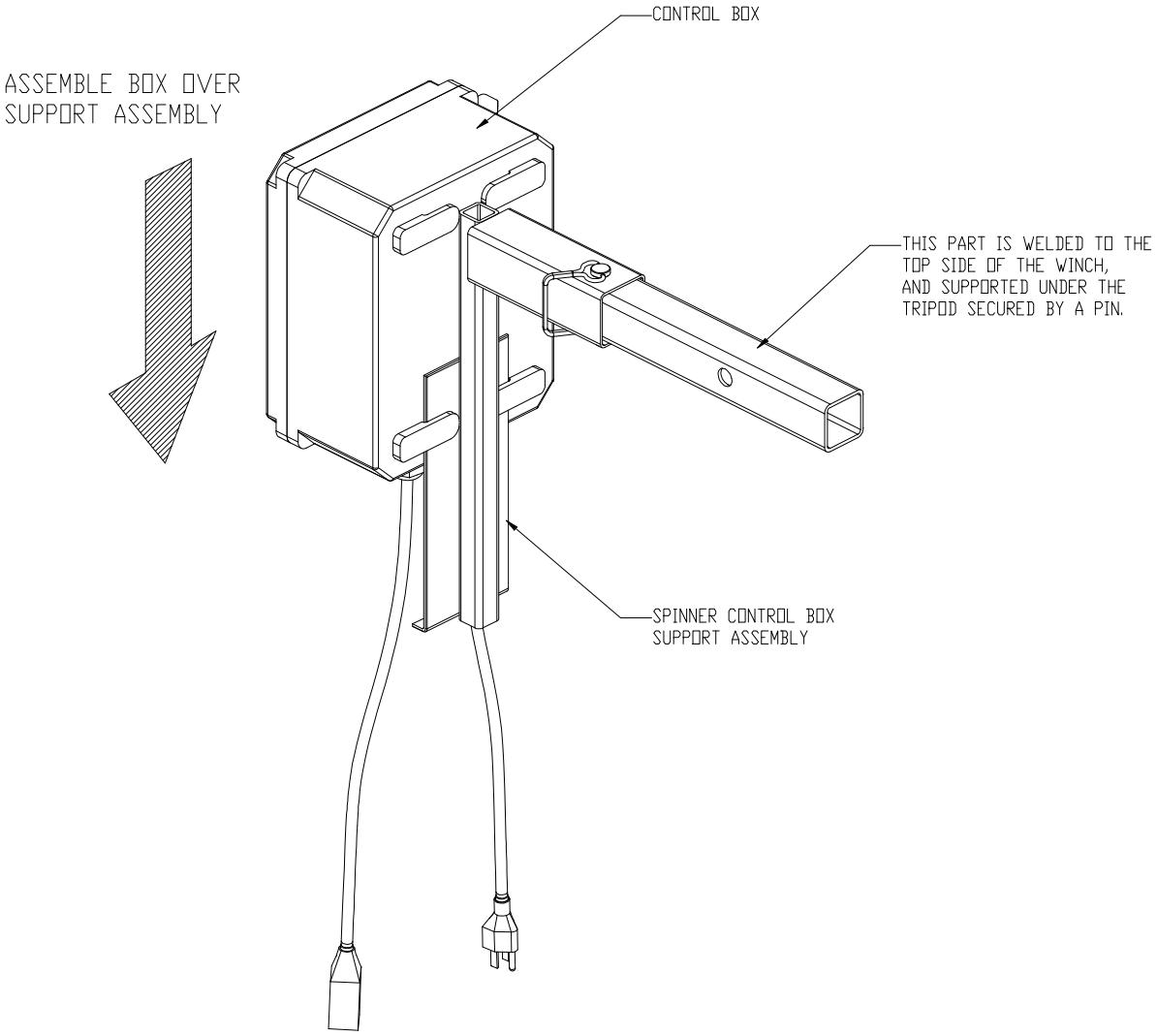


ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	44010054	CARRIER,BEARING SPINNER HEAD
2	1	44010055	SHAFT,DRIVE SPINNER HEAD
3	1	44010056	PLATE,BLADE SPINNER HEAD
4	1	44010057	HEAD, SPINNING
5	1	40000016	BEARING,BALL RACE 6205
6	1	40000013	BEARING,BALL RACE 6205-2RSH
7	1	10000020	RING,RETAINING INT-5000-0206
8	4	10000021	RING,RETAINING EXT-5100-0098
9	3	44010058	BLADE,SPINNERHEAD
10	1	44010059	BODY,HEAD-SPINNER
11	1	44010060	HOUSING,BODY SPINNER HEAD
12	1	44010061	COVER,HOUSING END
13	1	44010062	MODIFICATION-Lifting Eyebolt with Shoulder
14	12	10000023	BOLT, HEX 1/4-20UNC,x1"
15	4	10000024	SCREW,SOC FLAT HD 5/16-18x1"
16	3	10000025	BOLT,FLANGE HEX 1/4-20x1"
17	1	10000026	BOLT,FLANGE HEX 1/2-20 x1"
18	1	40000007	NIPPLE,GREASE-1/8-27-PTF
19	1	10000027	KEY,3/16"SQx1/2"
20	1	44010063	KEY,CUSTOM MOTOR-DRIVESHAFT
21	4	40000005	O-RING,1/16"x3"OD-BUNA-N
22	6	10000028	SHIM,7/8"x1 3/8"x0.020"
23	1	108020-00-motor	DC-XS56C-2500rpm-motor
24	1	10000063	SCREW,SET 3/8-16x3/8LNG
25	3	HMSA-7	SEAL,25-52x7
26	1	50-40mm-shim	SHIM,50MM-OD-40MM-ID-1MMTHK
27	1	speedysleeve	BEARING SLEEVE 25MM

Control box and mount



Control box assembly to support



Section 3 –Typical positioning

The machine is typically manually transported around the job site. The spinning head is designed to be slung from a 115VAC winch unit, that is, itself supported from a tripod.

Section 4 – Machine set up

Unpacking

Consult the final inspection record supplied in the packing for details of your machine and the items checked prior to shipment. Keep this document for your records.

The spinning head requires assembly to the motor pump unit, the tripod, the winch, the DC speed control. The DC speed control uses regular 115VAC power cord connections, and should be fused at 15A.

Ensure that all cable connections are secured prior to connection to the power source.

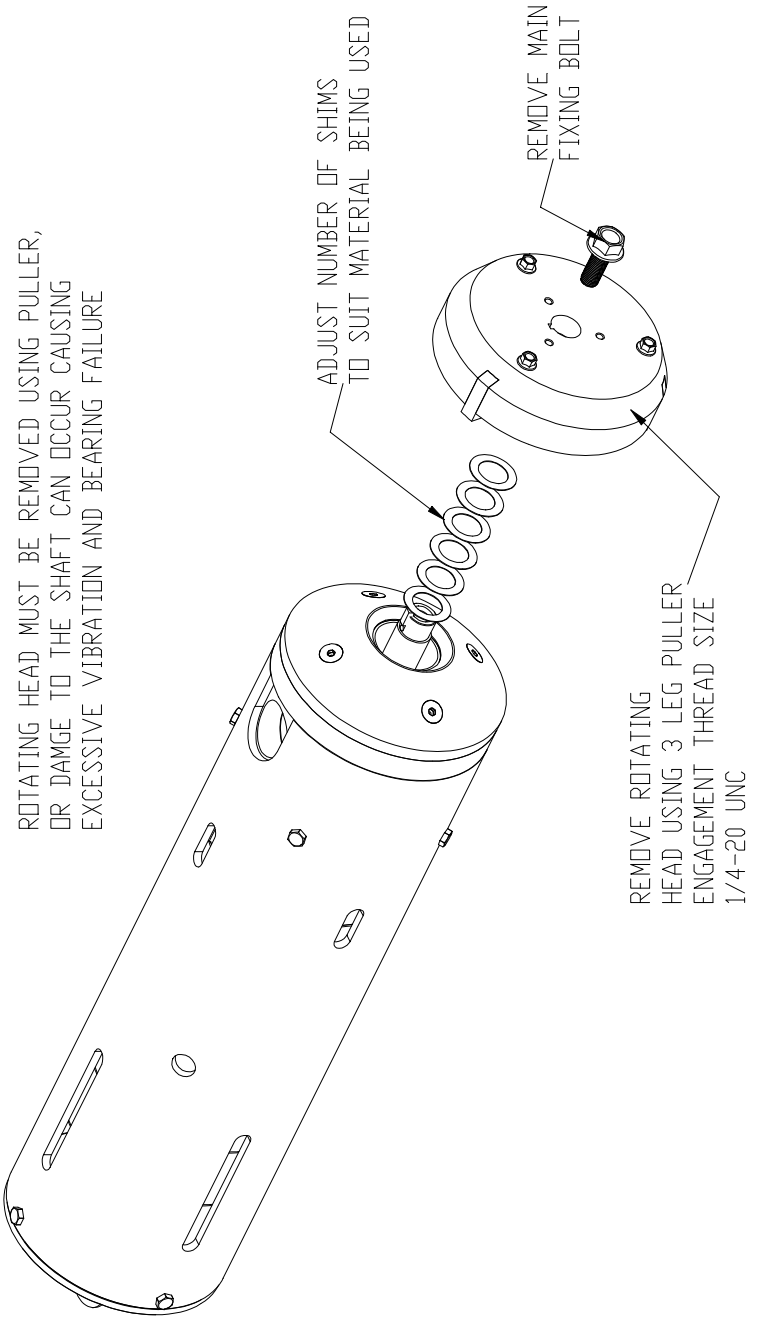
Do not make and break connections when the unit is powered up as severe damage will result to the drive unit

Operational photo

Machine adjustments

Shim adjustment

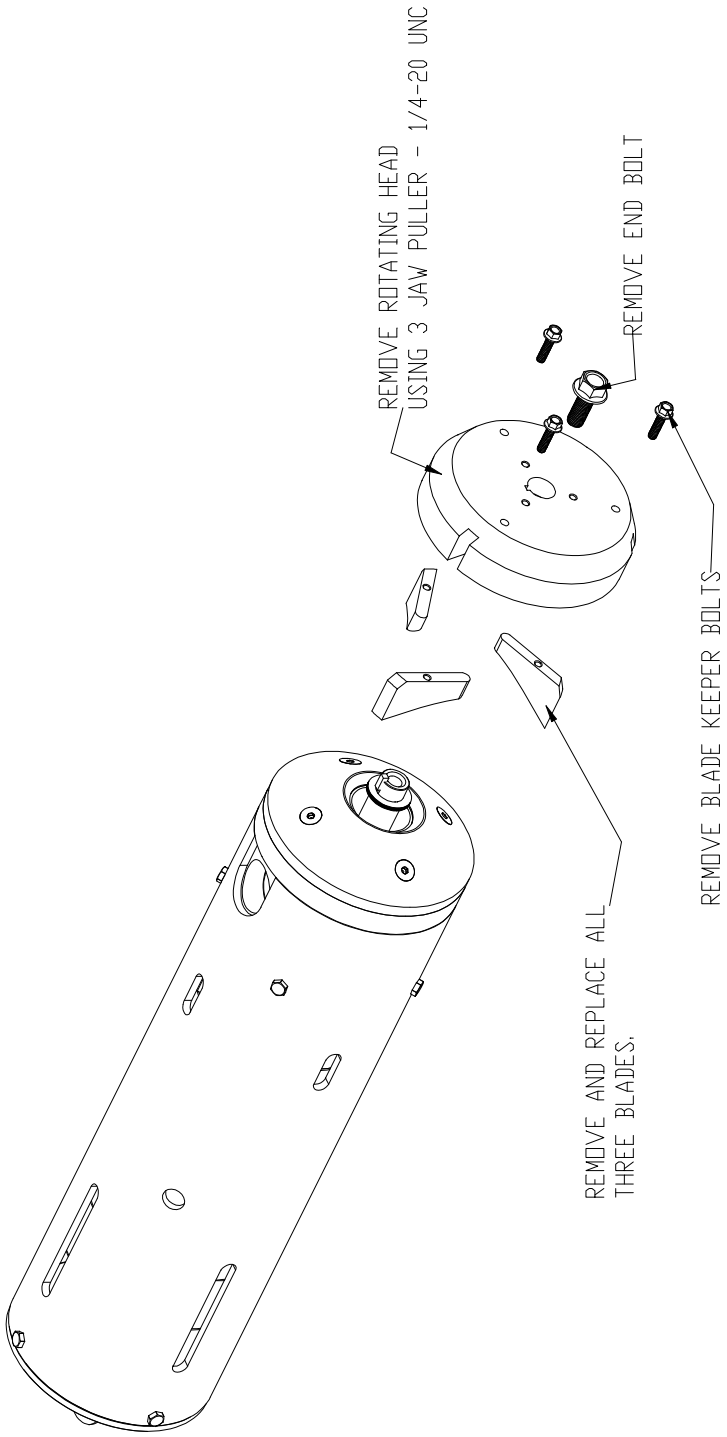
During normal use the diffuser blades will wear, allowing the gap between the blades and adjacent nose cone to increase reducing the slinging capabilities of the unit.
To reduce the gap, the rotating head must be removed, using a 3 leg puller with three ¼-20 threaded legs, after removing the main fixing bolt. Adjust the number of shims used, to obtain the correct performance with the chosen material. Retain all shims for later use.


ROTATING HEAD MUST BE REMOVED USING PULLER,
OR DAMGE TO THE SHAFT CAN OCCUR CAUSING
EXCESSIVE VIBRATION AND BEARING FAILURE
ADJUST NUMBER OF SHIMS
TO SUIT MATERIAL BEING USED
REMOVE MAIN
FIXING BOLT
REMOVE ROTATING
HEAD USING 3 LEG PULLER
ENGAGEMENT THREAD SIZE
1/4-20 UNC

If the wear is sufficiently high that there are no more shims to be removed, then the blades will need to be replaced.

Blade replacement

The removal of the rotating head is the same for the shim adjustment as it is for the blade replacement. Once the head has been removed, then the blades can be removed, and replaced in a full set of three. Replacement of the head will now require that the previously removed shims need to be replaced to lift the new blades from the cone face



Section 5 – Machine operation / cleaning / maintenance

Notes for operation

- For starting the spinner, ensure that the speed control is at minimum.
- Set up tripod over manhole. The legs lock into place when pulled out. Level the tripod buy pulling the pins in the legs. The pins have a push pin in the head to release them.
- Install the winch in the slot on the underside of the tripod head. Install the keeper pin through the holes that align with the winch. Install the safety pin into the keeper pin. Winch should be level.
- Attach the spinning head onto the safety hook on the winch.
- With the spinner turned OFF, lower into the hole to the base. Raise by at least 6” (or as required), and mark the cable at the drum. This marking is used to ensure that the spinner NEVER touches the bottom of the hole during operation. Severe damage can result if the touches the base during operation, such as bent shaft and bearing damage.
- Make sure control box is in off position before making connections. Connect cord with cable connectors to control box and to spinning head. Connect 110VAC plug to power source. Spinning head must be stabilized before turning on power, via by hand or by attaching mortar hose. Spinning head will twist cable without stability.
- Do not touch the rotating head when testing or running unit.
- Turn main power connection ON.
- Move start switch to ON.
- Adjust speed to desired speed (start at maximum, and adjust pump rate to suit).
- Lower unit into manhole, so that material will not fly out.
- Start the mortar pump unit at minimum speed to feed material to the spinning head and start to lower into the hole.
- Adjust material flow using pump speed until a smooth flow of material is flying from the spinning head. (see photo of operation). DO NOT pump excessive material into the spinner or pressurization will occur damaging the seals and invalidating any and all warranties.
- Continue lowering unit towards bottom of hole. Do not let unit touch bottom of hole (look for the cable marker to appear on the drum). Raise unit back to top of hole. Continue until walls are evenly coated. (approx 5 – 6 passes should provide approx ½” coverage).
- The mortar hose and power cable need to be attended to on the up and down travel to keep them from twisting.

Notes for cleaning

- When a hole is complete, the spinning head must be cleaned. Remove from winch, unscrew elbow on mortar inlet and flush with water using a high pressure lance (DO NOT focus the jet towards the seal area). Completely wash out mortar cavity and cup on bottom of unit.
- When cleaning use a high pressure water jet into the mortar inlet in the Nylon body.
- The removal of ALL material from within the Nylon housing and from around the drive shaft is critical, to prevent early failure of the front seal and then bearings.
- It is recommended that between holes, that the bearing be greased with 1 slowly applied pump of grease, without the removal of the grease vent port.
- The unit is ready for the next hole.
- To break down tripod pull down on the legs and they will fold inward.
- Do not spray water on or in control box. Control box should be cleaned by being wiped down with a damp rag or cloth.

Notes for maintenance

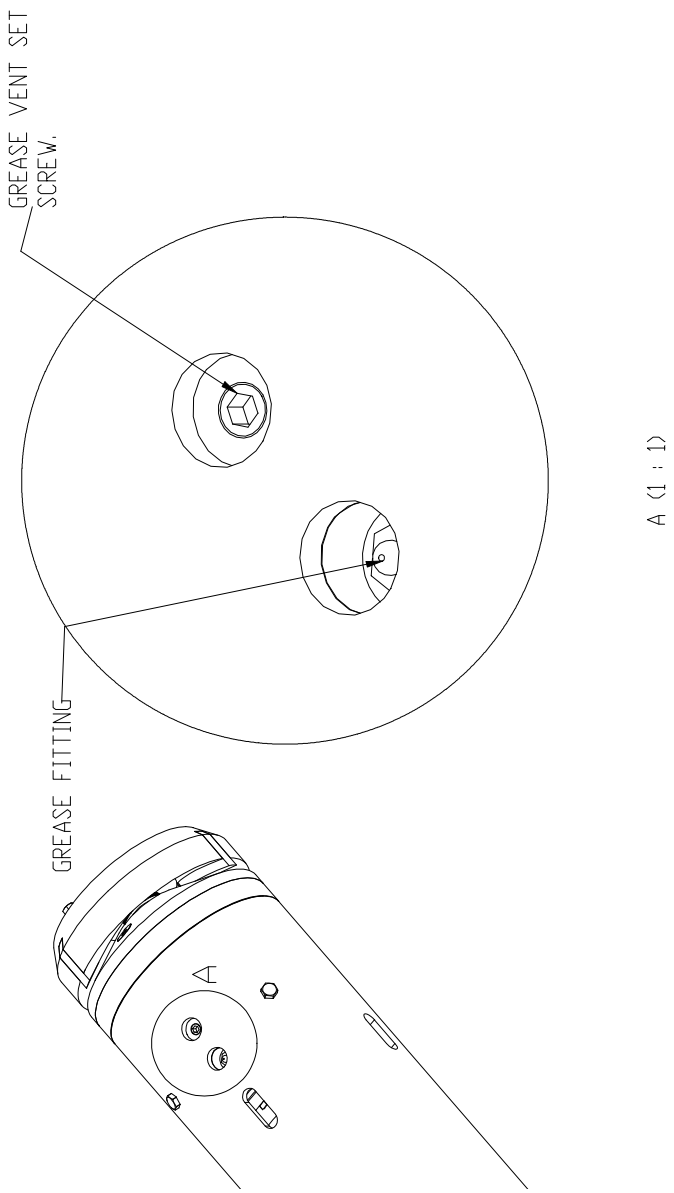
Grease to be used is No.730-2 Multipurpose grease, High temp, non-corrosive, extreme pressure, anti-wear, water repellent, high resist to water, steam, acids and detergents. White in color.

- At the start of each job the unit should be greased, per the following instructions.
- At the middle of the day the unit should again be greased, per the following instructions.
- At the end of the day the unit should be greased, per the following instructions.

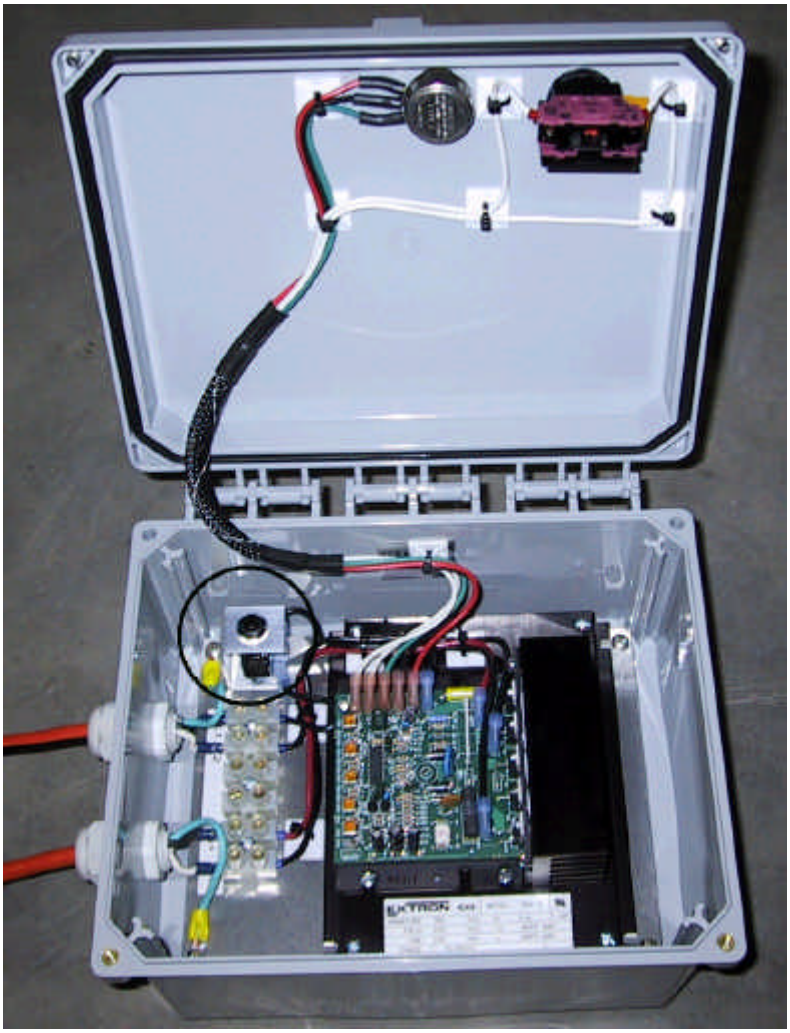
Greasing the unit is a simple yet critical part of the use and maintenance of the spinning head, as the grease physically keeps the material from entering into the bearing seal and bearing cavity. Failure to perform this task correctly WILL result in bearing failure.

- Clean both the grease nipple hole, the nipple and the grease vent hole.
- Remove the grease vent set screw using a 3/16” hex key.
- Assemble the grease gun to the nipple and pump grease until clean grease freely flows in a constant stream from the vent hole, at the same time the rotating head should be manually turned.
- If the existing grease is not the same color as the grease being pumped in, then this indicates that material is entering the bearing through the seal, and bearing failure is imminent.
- Replace the grease vent set screw, and lightly tighten down. Note do not over tighten, or damage to the housing and or thread will occur.
- Turn the rotating head manually and SLOWLY apply one to one and a half additional pumps of grease, through the grease nipple, grease will be heard to pass the front seal into the motor cavity.

During each greasing operation, the free spinning of the rotating head should be checked, feeling for signs of potential ingress of material into the bearing assembly, such as rough rotation, the feeling of intermittent rotation, and or “grinding” in the bearings. If any of these symptoms are felt then operation should stop and the unit returned for repair.



- In the event that the spinner bearings start to fail it is quite possible that the power supply will become overloaded, and the re-settable fuse will trip. If this happens, Turn off all power and disconnect form the supply, loosen the screws that keep the lid closed, open the box, identify the fuse (see photo below) and press the top until a click is heard and the fuse becomes reset.



Note. There are no user serviceable parts inside the control box.

LIMITED WARRANTY POLICY

Machine Technologies warrants each of its new machines to be free of defects in material and workmanship under normal use and services for a period of one (1) year from the date of delivery.

The warranty is issued ONLY to the INITIAL USER. The warranty period begins when the product is delivered to the initial user or when first put into service, whichever occurs first. Said warranty is void if the machine is subject to misuse, neglect, accident or abuse.

Machine Technologies' obligation under this warranty is limited to correcting without charge, at its warehouse, any parts or parts thereof which shall be returned to its warehouse, transportation/shipping prepaid and upon Machine Technologies' examination proves to have been originally defective. Correction of such defects by repair or replacement shall constitute fulfillment of all obligations to the initial user. This warranty does not include labor or transportation charges unless specifically identified and authorized in writing by Machine Technologies. Nor does the warranty apply to any unit upon which repairs or unauthorized alterations have been made.

The warranty does not apply to normal maintenance service or to normal replacement of certain machine parts which are subject to normal wear (including but not limited to pins, bushings, rotors, stators, hoses, spray caps, spray nozzles, mixing shafts, shaft couplings and connectors, dosing shafts, pump shafts, filter elements and tires).

THIS IS A LIMITED WARRANTY AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE. In no event shall Machine Technologies be made liable for incidental, general or consequential damage, loss or any expense directly or indirectly related and resulting from use or lack of use caused by delay in delivery, parts failure, or any other causes associated with the product use. No person, firm or corporation is authorized to assume for Machine Technologies any other liability in connection with the sale of Machine Technologies products.